SECTION 1409
ELECTRICAL DUCT

1409-1 DESCRIPTION

Furnish and install electrical duct including materials, equipment and labor for trenching, jacking, boring or directional boring and backfilling, so electrical circuits may be easily installed, repaired or replaced, and be protected from traffic loading at locations shown in the plans.

1409-2 MATERIALS

Refer to Division 10.

Item	Section
Conduit	1091-3

Use electrical duct that is non-metallic rigid PVC heavy wall conduit, HDPE Standard Dimension Ratio (SDR) 13.5 or rigid galvanized steel conduit.

1409-3 CONSTRUCTION METHODS

Duct is a passageway for electrical circuits. Install ducts in accordance with NEC requirements for an approved raceway. Locate the duct as shown in the plans and at a depth of at least 30" unless indicated otherwise in the plans. Locate bore pits outside the clear zone, as defined in the *AASHTO Roadside Design Guide*.

The lengths noted in the plans are only typical. Make actual field measurements to place the ends of the duct at the required locations. Make up lengths of duct with the minimum number of pieces joined together with couplings and solvent as recommended by the manufacturer.

Clean and plug the duct in accordance with Subarticle 1400-4(E).

Plug the duct with oakum or duct seal after feeder circuits in conduit are extended through duct.

Place buried duct in a trench with essentially vertical walls and only wide enough for easy installation of the duct. Tunneling by hand or other approved methods may be required to install duct beneath existing walks or paved ditches. Perform backfilling in accordance with Article 300-7.

Jacked duct may be installed by either of the following methods at the Contractor's option, when placement of electrical duct beneath pavement by jacking is noted in the plans.

(A) The duct may be pushed beneath the pavement through earth without prior construction of an opening.

(B) A bored opening not more than 1" larger than the outside diameter of the duct may be made by augering and the duct inserted.

(C) A drilled opening not more than 1" larger than the outside diameter of the duct may be made with a pneumatic vibrating machine and the duct inserted.

(D) HDPE conduit may be installed in accordance with Subarticle 1715-3(D).

Do not install non-metallic conduit by jacking method (A) as listed above.

If installation of a duct is begun and not completed, plug any opening as directed. Installation of duct by water jetting will not be acceptable.

At locations where it is indicated in the plans that the duct is to be connected to boxes, foundations, or other raceways, install in accordance with Subarticle 1400-4(E) to provide an approved raceway as specified by the NEC.

Unless otherwise noted in the plans, rigid galvanized steel conduit is intended for use in above ground applications only.

1409-4 MEASUREMENT AND PAYMENT

Electrical Duct (Size and Type) will be measured and paid as the actual number of linear feet of duct, measured in place to the nearest whole foot, installed and accepted.

Payment will be made under:

Pay Item	Pay Unit
Electrical Duct, (Size & Type) ____	Linear Foot

SECTION 1410
FEEDER CIRCUITS

1410-1 DESCRIPTION

Furnish and install all conductors and conduit, including tools, equipment, trenching and backfilling to provide electrical circuits at locations shown in the plans.

1410-2 MATERIALS

Refer to Division 10.

Item	Section
Conduit	1091-3
Wire and Cable	1091-2, 1400-2

Use UL listed, Type USE wire for feeder circuits in conduit. The equipment grounding conductor may be bare or insulated. Use conductors which are copper and in accordance with Subarticle 1400-2(C). Give careful attention to the required color code. Do not mark a white conductor in a cable assembly any other color; however, a white conductor may be stripped at all accessible points and used as a bare equipment grounding conductor.

Provide metallic (rigid galvanized steel) and non-metallic (PVC or HDPE) conduit in accordance with the Subarticle 1400-2(B) with the appropriate type being used at locations as shown in the plans.

1410-3 CONSTRUCTION METHODS

Install feeder circuits in continuous runs, without splices, except at junction boxes or within light standard bases.

Install conductors in accordance with the Subarticle 1400-4(F) and conduit in accordance with the Subarticle 1400-4(E).

Excavate trenches to depths and widths as shown in the plans with essentially vertical walls and as straight as possible, when underground feeder circuits are required. Locate underground feeder circuits a minimum of 6 ft back of the face of curb or outside the limits of the paved shoulder and stone base, as directed. Use care to prevent conflict with existing or future guardrails, sign posts, delineators and similar devices.

Surround the underground feeder circuit in conduit with clean soil and use backfill free of rocks and other objectionable materials which might damage the conduit. This will require partial backfilling by hand in areas where it is likely that objectionable materials will be included if mechanical methods of backfilling are used.

Perform all necessary search methods, including, but not limited to, use of underground metal detection equipment and excavation equipment, to locate existing electrical duct. Locate the duct and perform all necessary work including cleaning of the duct before installation of proposed circuits.